AKKAMAHADEVI WOMEN'S UNIVERSITY VIJAYAPURA

586108 KARNATAKA

RESEARCH PROPOSAL

ON

"STUDIES ON SYNTHESIS AND BIOLOGICAL EVALVATION OF HETEROCYCLIC COMPOUNDS CONTAINING OXYGEN, SULPHUR AND NITROGEN''

Research proposal submitted to the department of pharmaceutical chemistry

for registration of degree of

"DOCTOR OF PHILOSOPHY IN PHARMACEUTICAL CHEMISTRY''

Submitted by

Ms Gulafshan Ioni

Under the guidance of

Dr Sanjeev Kumar Giri M.sc Ph.D.

Assistant prof. of Pharmaceutical chemistry

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DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AKKAMAHADEVI WOMENS UNIVERSITY

VIJAYAPURA 586101 KARNATAKA

Ph.D. PROFILE

Name of scholar:	**Gulafshan loni**
Address:	**Research Scholar Department of pharmaceutical Akkamahadevi Women's university torvi campus Vijayapura**
Date of Joining:	**18-3-2019**
Registration Number:	**yet to be allotted**
E-Mail Id	**gulafshanloni99@gmail.com**
Name of Department:	**Pharmaceutical chemistry**
Course:	**Ph.D. in Pharmaceutical Chemistry**
Area of study:	**Heterocyclic compounds**
Title of Research:	**"Synthesis and biological evaluation of heterocyclic containing Nitrogen oxygen and Sulphur"**
Education:	**M.Sc. (Pharmaceutical chemistry)**

Date: **Signature of the Candidate**

Signature of Guide

INTRODUCTION

Heterocyclic compound are also called heterocycle, these are broad long synthetically applicable, and widely distributed in nature, its biological activities always implements the new approaches for medicinal chemist to discover the novel drugs [1]

These compounds characterized that "some or all atoms in their molecules are joined in a ring containing at least one atom of an element other than carbon".

The cyclic part present in such compounds indicates that at least one ring structure should present in compound. The presence of heteroatom in it gives the various physical and chemical properties to these compounds [3]. That are distinct from those of their all carbon-ring analogous [2].

Many naturally occurring pigments, Vitamins, and antibiotics are heterocyclic compounds, as are most hallucinogens.

Hence Now the modern society is dependent on synthetic heterocycles for use as a drug, pesticides, dyes and plastics.

The most common five and six membered heterocyclic compounds containing the hetero atom of Nitrogen, Oxygen, Sulphur and the best known of simple heterocyclic compounds are pyridine, pyrrole, Furan and thiophene.[4]

Heterocyclic compounds have a wide application in pharmaceuticals, agrochemicals and veterinary products. These heterocyclic compounds are very useful and essential for human life. Various compounds such as hormones, alkaloids antibiotic, and essential amino acids, haemoglobin, vitamins, dyestuffs and pigments have heterocyclic structure.[5]

Heterocyclic compounds are primarily classified as saturated and unsaturated. The saturated heterocyclic compounds behave like the acyclic derivatives with modified steric properties [6].

Pyridine and tetra hydro furan are the conventional amines and ethers of this category. And the unsaturated heterocyclic compounds of 5- and 6 member rings have unstrained unsaturated nature hence these compounds have broad large studies and biological importance [7].

Unsaturated compounds including pyridine, Thiophene, Pyrrole, Furan and their benzene derivatives such as Quinoline, Indole, Benzofuran etc…Heterocyclic compounds

containing Sulphur, Oxygen, and Nitrogen derivatives have wide importance in pharmaceuticals [8]

Study on heterocyclic compounds containing nitrogen, sulphur oxygen atoms:

Study on synthesis of these compounds is having extensive biological importance. Heterocyclic compounds containing sulphur, Oxygen and nitrogen are an important class of compounds for new drug development.

The synthesis of novel thiophene derivatives or sulphur containing heterocyclic compounds derivatives, pyridine derivatives or Nitrogen containing Heterocyclic compound Derivatives, Furan derivatives or oxygen containing heterocyclic compound derivatives and investigation of their chemical and biological behaviour have more importance in recent decades.[10]

Due to their chemical properties and biological activities of absorption, digestion and excretion in body they possess extensive biological activities like antimicrobial, antimycobacterial, anticonvulsants, antidiabetics, antitumor, antifungal etc. These compounds have proven that they are highly effective with improved potency and lesser toxicity [11].

Objectives of the study

The following are the main objectives of present study

- To carry out extensive review of literature review to understand methods for synthesis of heterocycles containing Sulphur, Nitrogen, and Oxygen heteroatoms
- Design the synthesis
- To characterize the synthesized compound employing different spectral tools.
- To evaluate the synthesized compounds for their extensive biological activities' antifungal, antitumor, Analgesic and antibacterial etc